PRELIMINARY AND SHORT REPORT

AN ADAPTATION OF LOW POWER POCKET MICROSCOPES FOR CUTANEOUS EXAMINATION*

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No simple portable microscope designed to suit the needs of the dermatologist has been made available commercially. In the Department of Dermatology and Syphilology, University of Cincinnati, it has been customary to use fixed focus low power (20× and 40×) microscopes for rapid preliminary examination of the skin. These instruments are readily obtainable. However, they are inadequate in three important respects: 1. Insufficient illumination; 2. Illumination not at the best angle to the surface for viewing the epidermis; 3. Use of the open side of the microscope for medicinal or operational procedure interferes with illumination.

At the suggestion of Dr. Leon Goldman the instrument shown in Fig. 2 was developed. It consists of the altered pocket microscope shown in Fig. 1 (A) and an attached illuminator shown completely assembled with microscope in Fig. 2.

The body of the illuminator (1) is made of transparent plastic (Plexiglas) of overall dimensions 0.687″ x 1.540″ x 2.156″. The hole for the microscope is bored 0.425″ through, and 0.437″ to a shoulder 0.937″ from the object end. These dimensions were to suit the microscope as purchased. The hole for the single dry cell (B) is bored 0.468″ to a depth of 1.078″ to suit the 0.437″ diameter and 1.156″ length of the dry cell as purchased. The switch cap (2) clamps the dry cell firmly in place when fastened with the screw (3).

The lamp (C) is General Electric Company's lamp number 112, having a convex lens as part of the bulb, and drawing 0.22 Amp. at 1.2 Volts. The beam of light cast by the lens is somewhat divergent, because the filament is closer to the lens than the focal point.

The microscope is altered as shown at "A" Fig. 1, by turning a 0.425″ shoulder one inch from the object end (if not already turned to this dimension as purchased) and drilling a hole 0.187″ in diameter, leaving only about 0.035″ or 0.040″ of web at the object end. The convex lens of the lamp nicely lodges in this hole. The socket end of the lamp is held by the bronze spring (4) and the lamp is easily removed by pushing this spring with the thumb nail. The spring also makes contact with the zinc of the dry cell at its base when the lamp is lit. The circuit, completed by the spring contact pin assembly (5), is opened by the switch (6) which pushes the spring (4) away from the base of the cell by means of an eccentric.

As both 20 power and 40 power microscopes of the same overall dimensions can be purchased, the illuminator is interchangeable for both.

With this assembled microscope and illuminator, the light direction is reversed—coming out of the cutaway portion of the microscope and allowing the use of this opening for any convenient manipulation.

The illumination is adequate and its oblique direction (about 20 degrees with the skin surface) is of great advantage.

It is possible that further improvement may be expected in the future by bringing the light beam still closer to grazing incidence and by improving the type of microscope used.

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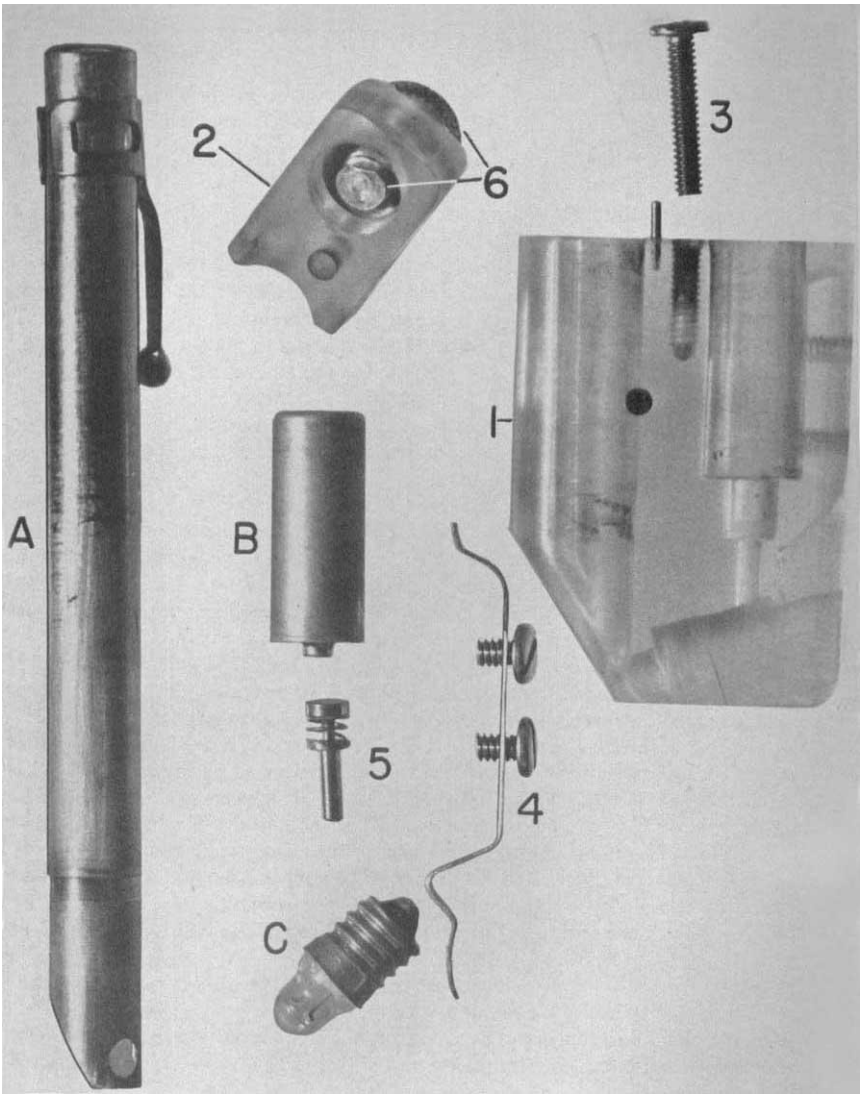

FIG. 1. Disassembled view—microscope and illuminator

A. pocket microscope

B. dry cell

C. lamp

1. body (plexiglas)
2. switch cap (plexiglas)
3. screw
4. bronze spring
5. spring contact pin assembly
6. switch

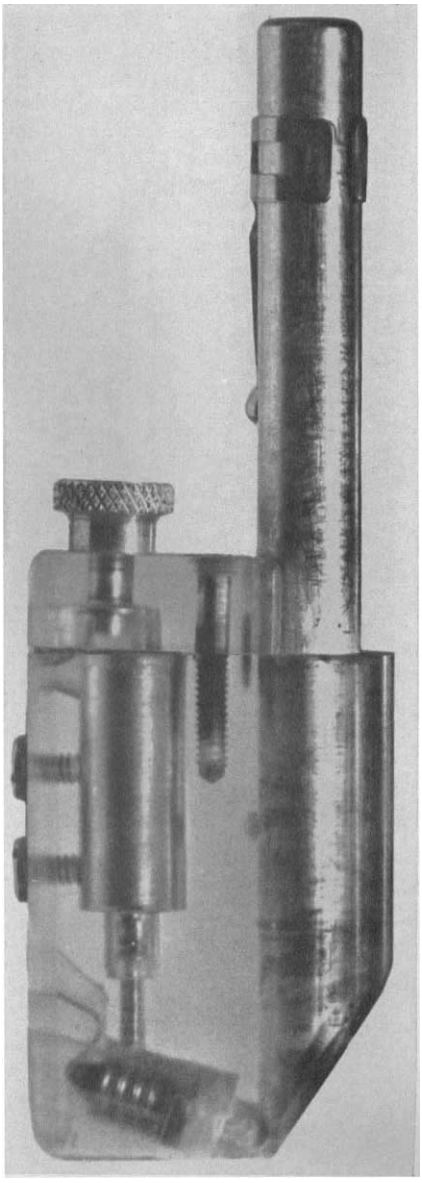

FIG. 2. Assembled microscope and illuminator

CONCLUSION

A simple portable microscope with illuminator is offered for the examination of the surface of the skin at magnifications of 20× and 40×.

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